

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference <b>NJE/G22299WO</b>	<b>FOR FURTHER ACTION</b> see Form PCT/ISA/220 as well as, where applicable, Item 5 below.	
International application No. <b>PCT/GB2004/005014</b>	International filing date (day/month/year) <b>29/11/2004</b>	(Earliest) Priority Date (day/month/year) <b>19/12/2003</b>
Applicant <b>UNIVERSITY OF KENT</b>		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).



With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

**2.**

**Certain claims were found unsearchable** (See Box II).

**3.**

**Unity of invention is lacking** (see Box III).

**4. With regard to the title,**

the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

**5. With regard to the abstract,**

the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

**6. With regard to the drawings,**

- a. the figure of the **drawings** to be published with the abstract is Figure No. 1



as suggested by the applicant.



as selected by this Authority, because the applicant failed to suggest a figure.



as selected by this Authority, because this figure better characterizes the invention.



none of the figures is to be published with the abstract.

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/GB2004/005014

**A. CLASSIFICATION OF SUBJECT MATTER**  
G06F11/36

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	K. D. MAIER: "On-chip Debug Support for Embedded Systems-on-chip" IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS (ISCAS2003), vol. V, 25 May 2003 (2003-05-25), pages 565-568, XP002369975 Bangkok, Thailand	1,11-13, 18-20
Y	abstract  page 565, right-hand column, line 4 - line 37 page 566, left-hand column, line 30 - line 60 page 567, right-hand column, line 27 - page 568, left-hand column, line 7 ----- -/--	2-10, 14-17

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

\* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \* & \* document member of the same patent family

Date of the actual completion of the international search

16 March 2006

Date of mailing of the international search report

30/03/2006

Name and mailing address of the ISA

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Authorized officer

Melis, W

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB2004/005014

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KAORI KURIHARA ET AL: "HIGH ELECTRONIC-OPTICAL CONVERSION EFFICIENCY IN A VERTICAL TO SURFACE TRANSMISSION ELECTRO-PHOTONIC DEVICE WITH A VERTICAL CAVITY" EXTENDED ABSTRACTS OF THE INTERNATIONAL CONFERENCE ON SOLID STATE DEVICES AND MATERIALS, JAPAN SOCIETY OF APPLIED PHYSICS. TOKYO, JA, 1 August 1992 (1992-08-01), pages 598-600, XP000312275 abstract page 598, left-hand column, line 1 - line 20 figure 1	2-10, 14-17
X	A. MAYER, H. SIEBERT, A. KOLOF, S. EL BARADIE: "Debug support for complex system-on-chips" EMBEDDED SYSTEMS CONFERENCE, April 2003 (2003-04), pages 1-16, XP008060789 San Francisco page 8, line 10 - line 30 page 13, line 12 - page 14, line 4	1,11-13, 18-20

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

To:

see form PCT/ISA/220

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/GB2004/005014

International filing date (day/month/year)  
29.11.2004

Priority date (day/month/year)  
19.12.2003

International Patent Classification (IPC) or both national classification and IPC  
INV. G06F11/36

Applicant  
UNIVERSITY OF KENT

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1 (a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

10/583495

International application No.  
PCT/GB2004/005014

AP20 Rec'd PCT/PTO 16 JUN 2005

**Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/005014

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	2-10,14-17
	No: Claims	1,11-13,18-20
Inventive step (IS)	Yes: Claims	
	No: Claims	1-20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/GB2004/005014

**Re Item V.**

1. Reference is made to the following documents:

- D1** : K. D. MAIER: "On-chip Debug Support for Embedded Systems-on-chip" IEEE INTERNATIONAL SYMPOSIUM ON CIRCUITS AND SYSTEMS (ISCAS2003), vol. V, 25 May 2003 (2003-05-25), - 28 May 2003 (2003-05-28) pages 565-568, XP002369975 Bangkok, Thailand
- D2** : KAORI KURIHARA ET AL: "High electronic-optical conversion efficiency in a vertical to surface transmission electro-photon device with a vertical cavity" EXTENDED ABSTRACTS OF THE INTERNATIONAL CONFERENCE ON SOLID STATE DEVICES AND MATERIALS, JAPAN SOCIETY OF APPLIED PHYSICS. TOKYO, JA, 1 August 1992 (1992-08-01), pages 598-600, XP000312275
- D3** : A. MAYER, H. SIEBERT, A. KOLOF, S. EL BARADIE: "Debug support for complex System-on-chips" EMBEDDED SYSTEMS CONFERENCE 2003, April 2003, San Francisco, USA, XP008060789

**2. INDEPENDENT CLAIM 1**

2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parentheses applying to this document):

An integrated circuit assembly for use in a system, comprising: a first arrangement of connection terminals for connecting the integrated circuit to other components of the system (any chip has a set of pins on the periphery to allow connection); debug circuitry (page 565, left-hand column, lines 3-6); a debug interface comprising a second arrangement of connection terminals (page 566, left-hand column, lines 39-46); a signal conversion arrangement coupled to the second arrangement of connection terminals for converting (page 567, right-hand column, lines 27-35) electrical signals provided to the second arrangement of terminals into a format for transmission to external monitoring circuitry (page 568, left-hand column, line 5);

and a communications link for communicating the data provided to the second arrangement of terminals to the external monitoring circuitry (page 566, left-hand column, lines 50-56).

The subject-matter of claim 1 is therefore not new Article 33(2) PCT.

2.2 The present application can neither be considered novel in relation to document D3, which discloses (the references in parentheses applying to this document): a debugging circuit and interface for a System-on-Chip (page 8, lines 10-11). The debugging hardware can be connected through a port on the chip or special debugging port interfaces applied only to the development chips (page 13, line 21-25).

### 3. INDEPENDENT CLAIM 13

3.1 Independent method claim 13 corresponds to independent system claim 1. Hence, the reasoning as discussed under 2 applies, mutatis mutandis, to the subject-matter of this corresponding claim 13, depriving it from being novel (Article 33(2) PCT).

### 4. INDEPENDENT CLAIM 18

4.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 18 is not new in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parentheses applying to this document): A debugging circuit and interface linked to a circuit to be debugged (page 565, left-hand column, lines 3-6). Secondly, there is also some memory present which can be accessed from the debugger (page 568, left-hand column, lines 42-43).

The subject-matter of claim 18 is therefore not new Article 33(2) PCT.

4.2 The present application can neither be considered novel in relation to document D3, which discloses (the references in parentheses applying to this document): a debugging



circuit and interface for a System-on-Chip (page 8, lines 10-11). The debugging hardware can also access the on chip memory (page 8, lines 25-26).

**5. DEPENDENT CLAIMS 2-12, 14-17, 19, 20**

5.1 Dependent claims 2-12, 14-17, 19, 20 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT), see documents D1-D3 and the corresponding passages cited in the search report.

W. Melis